

## ABSTRACT

A multi-cylinder internal-combustion engine where translation between piston reciprocating motion and rotational motion occurs via a pair of conjugate axial cams with dual rolling followers on the piston-assemblies - one rolling follower per conjugate axial cam. A pair of conjugate axial cams form a grooved or ribbed axial cam that is form-closed and is frequently referred to as a barrel-cam. Balanced operation is ensured through a series of relative constraints between the number and masses of uniformly spaced piston-assemblies about the barrel-cam cylinder, the shape of the barrel-cam's piston-assembly displacement profile, and also the valve-assemblies along with their actuation properties.